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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/998,222 | 12/03/2001 | Hugo Ignacio de Lasa | UW07 | 5074 |

9385 7590 10/16/2002

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EXAMINER

MEDINA SANABRIA, MARIBEL

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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1754

6

DATE MAILED: 10/16/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/998,222

Applicant(s)

DE LASA ET AL.

Examiner

Maribel Medina

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 June 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

a. In figures 1 and 2, (14) is not shown (See page 7, line 26)

b. In figure 3, "102" is not shown (See page 9, line 17)

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "104" has been used to designate both "crystallites" (See page 9, line 26 and page 10, line 1) and "internal pores"; and the reference character "100" has been used to designate both a "support" and a "catalyst" (See page 10, line 26). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 4 and 9 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 4 is directed to the dimension and the distribution of the crystallites; the ranges are already disclosed in claim 1, from which this claim

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is dependent of. It is suggested to cancel the claim or to further delimit the claimed ranges. In regards to claim 9, the dimension range starting point 5 Å falls out of the range of claim 1, 5 Å is less than the starting point of the range of claim 1 which is 10 Å

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

5. Claims 1-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- a. Regarding claim 1, the phrase "particularly suited" (See line 1) renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention.
- b. The term "discrete" in claims 1 and 23, line 2 of each is a relative term, which renders the claim indefinite. The term "discrete" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably appraised of the scope of the invention.
- c. The term "suitable" in claims 1, and 13-22 is a relative term, which renders the claims indefinite. The term "suitable" is not defined by the claims, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably appraised of the scope of the invention.

d. In claims 1, 4, and 23 the limitation that reads “measured in any one direction in the range of between”, renders the claim indefinite, since it is not clear whether, the “dimension” falls out of the specified range, to values as for example 5 Å or 1001 Å. It suggested to delete the portion that read “measured in any one direction”.

e. Claim 2 is indefinite for use of improper Markush language. The phrase that reads “selected from the group comprising” is confusing and renders the claim indefinite. The phrase should read --selected from the group consisting of--.

f. Regarding claim 2, the phrase "other suitable supports having equivalent physical characteristics" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "other"), thereby rendering the scope of the claim(s) unascertainable.

g. Claims 5, 9, and 10 recite the limitation "said average size". There is insufficient antecedent basis for this limitation in the claim. Note that claim 1 is directed to a “characteristic dimension”.

h. The term "zeolite-type" in claims 11 and 12 is a relative term, which renders the claims indefinite. The term "zeolite-type" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably appraised of the scope of the invention. (See *Ex parte Copenhaver*, 109 USPQ 118 (Bd. App. 1955)).

i. Claim 23 recites the limitation "said support" in line 3. There is insufficient antecedent basis for this limitation in the claim.

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- j. Claim 23 recites the limitation "said support element" in line 5. There is insufficient antecedent basis for this limitation in the claim.
- k. Claim 23 recites the limitation "said squared meter of nickel exposed" in line 6. There is insufficient antecedent basis for this limitation in the claim.
- l. Claim 23 is indefinite for use of improper Markush language. The phrase that reads "selected from" is confusing and renders the claim indefinite. The phrase should read --selected from the group consisting of--.
- m. Claims 24 and 25 recite the limitation "said support". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-4, 6, 13-16, 23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,714,092 A (van Looij et al).

van Looij et al disclose a process for the production of hydrogen by steam reforming methane. In regards to claim 1, van Looij et al disclose a nickel catalyst comprising nickel particles on a support, wherein 90% of the particles are smaller than 10 nm (100 Å) (See col. 3, lines 27-33) and the catalyst is prepared a by the incipient wetness impregnation (See col. 6, lines 15-20).

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The limitation of the claim that reads “capable of withstanding at least 6 catalyst regeneration without significantly inhibiting its catalytic activity in said reforming process” Has been noted, since the claimed catalyst is prepared by the same process as instantly claimed and contain the same components, this property will be inherently provided by the catalyst of van Looij et al.

In regards to the limitation that read “and a distribution on said support element of no more than 0.2 square meter of exposed nickel/ square meter of support surface”. van Looij et al fail to disclose this range or the distribution of the exposed nickel on the support. However, this is a result effective variable, as clearly acknowledged in the instant specification at page 11, lines 21-25. The distribution is dependent on the number of times that the incipient wetness is performed. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have performed the incipient wetness method various times until achieving the desired distribution of the nickel on the support (of not more than 0.2 square meter of exposed nickel/square meter of support surface), since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

In regards to claims 2, 3, 6, and 25, van Looij et al discloses the use of alpha alumina as the preferred support.

In regards to claims 13-16, van Looij et al, fail to disclose the size and range of the support. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have determined the optimum size of the alumina support of van Looij et al catalyst, in the range from 5 and 200 microns or 20 and 100 microns, since it has been held

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that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

In regards to claim 23, van Looij et al discloses the reforming of hydrocarbons, however, it fails to disclose "recycling said catalyst to and from said reaction zone, regenerating between 10 and 100% of the catalyst being recycled in a regeneration zone to provide a regenerated catalyst and returning said regenerated catalyst to said reaction zone. It would have been obvious to one of ordinary skill in the art at the time the invention was made since it was known in the art that to regenerate catalysts used in steam reforming process such as the one of van Looij et al.

Allowable Subject Matter

8. Claims 5, 7-12, 17-22, and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter: Claims 5, 7-12, 17-22, and 24 disclose allowable subject matter. In regards to claim 5, the prior art (van Looij et al) fails to disclose or suggest a nickel crystallite dimension or size in the range of 150 Å and 250 Å. In regards to claims 8, 11, 12 and 24, the prior art fails to disclose the use of a zeolite.

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Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to the examiner Maribel Medina. The examiner can normally be reached on Monday through Friday from 8:30 AM to 4:30 PM. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Examiner: Maribel Medina

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October 10, 2002


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